



## REGION 8

DENVER, CO 80202

Ref: 8SEM-EMB

### **ACTION MEMORANDUM**

**SUBJECT:** Action Memorandum for a Removal Action at the Helena Mercury Release Site pursuant to the On-Scene Coordinator's delegated authority under CERCLA Section 104.

**FROM:** Martin McComb, OSC  
Site Assessment and Removal Section

**THRU:** Kerry Guy, Supervisor  
CERCLA Removal Section

Deirdre Rothery, Manager  
Emergency Management Branch

**TO:** Aaron Urdiales, Director  
Superfund and Emergency Management Division

#### **I. Purpose**

The purpose of this memorandum is to document the decision to initiate emergency response actions described herein for the Helena Mercury Release Site located in Helena, Lewis and Clark County, Montana pursuant to the On-Scene Coordinator's delegated authority under CERCLA Section 104. This emergency response involved the collection of liquid mercury, decontamination of a garage and shower stall, and off-site disposal of wastes. Conditions existing at the Site present a threat to public health or welfare or the environment and meet the criteria for initiating a removal action under 40 CFR 300.415(b)(2) of the National Contingency Plan (NCP).

#### **II. Site Information**

##### **A. Site Description**

Site Name: Helena Mercury Release  
Site Spill ID (SSID): B8K9  
NRC Case Number: 1400383  
CERCLIS Number: MTN000826431  
Site Location: 2409 Bear Creek Road, Helena, MT 56901  
Lat/Long: 46.52679461217856, -112.1671382373062

Potentially Responsible Party (PRP):  
NPL Status: Non-NPL  
Removal Start Date: 05/31/2024

## **B. Site Background**

### **1. Site Evaluation**

On May 30, 2024, an employee of Feathered Pipe Ranch (a non-profit yoga retreat center) picked up an unlabeled bottle while cleaning out a detached garage which is used as a workshop and storage facility. The bottle was heavier than expected and slipped from his hand. The bottle hit a work bench and shattered, which resulted in a reported 500mL of mercury being released to the garage. The employee left the garage, bagged their contaminated clothing just outside the door, walked to a nearby bathhouse and rinsed themselves in a shower. Staff at the retreat center closed and isolated the garage before calling the National Response Center.

Staff at the resort were unaware of the mercury in the garage and conjectured that the mercury belonged to the father of a former caretaker who was involved in the mining industry.

### **2. Physical location and Site characteristics**

The address of the Feathered Pipe Ranch is 2409 Bear Creek Road, Helena, MT 56901 in Lewis and Clark County. The Site is an 11-mile drive outside of the Helena city limits to the southwest in a rural and wooded area. There is a roughly ½ mile narrow access road leading up to the resort that has a few summer cabins and permanent residences along it. There are also several properties and homes adjacent to the resort that are accessed by a different road.

The OSC approximates that there are less than 50 people living year-round within a 1-mile radius of the resort.

The non-profit Feathered Pipe Ranch is a seasonal yoga retreat which has been operated by a foundation for nearly 50 years. Guests typically stay at the resort with Saturday being the day that the previous week's guests depart and the new guests arrive. Approximately 30 guests are hosted by roughly 20 resort staff for well-being classes, yoga practice, massage/body work, sound therapy, meditation, drum circles, etc. Children of the staff have freedom on the property.

Guests stay in a variety of housing spread across the property including guest rooms, tents, and teepees. There is a gift shop, industrial kitchen, dining hall, common bathhouse, recreation pond, hiking trails, staff cabins, yoga practice decks, reflective gardens, and other retreat facilities on the property.

EPA's response effort is focused on two buildings at the resort: a common bathhouse and a workshop/garage.

According to EPA's Environmental Justice (EJ) Screening and Mapping Tool, the data do not indicate potential areas of EJ concern at or near the Site.

3. Release or threatened release into the environment of a hazardous substance, pollutant or contaminant.

Mercury is the contaminant of concern and it is listed as a hazardous substances as defined by section 101(14) of CERCLA.

Mercury is the only metal that is liquid at room temperature. In its pure form (often called metallic), mercury is a shiny, silver-white, odorless liquid. At room temperature, mercury vaporizes into a toxic, colorless, odorless gas.<sup>1</sup> In its vapor form, mercury is easily inhaled and extremely toxic. For liquid mercury, the most important route of absorption is through inhalation. Because of the chemical nature of mercury vapor, deposition and retention in the lungs are quite high (on the order of 80 percent in humans).<sup>2</sup>

When spilled or tracked into a small or poorly ventilated room, mercury can pose significant health threats. Very small amounts of mercury released into an enclosed space (such as a home or classroom) can raise air concentrations to harmful levels. Metallic mercury is extremely difficult to remove from shoes, clothes, furniture, carpet, and other porous items. It is easily tracked and transferred. If these items are not properly disposed or cleaned, the mercury can linger for months or years and continue to pose a health threat.<sup>3</sup>

### **III. Threats to Public Health Welfare or the Environment**

#### **A. Nature of Actual or Threatened Release of Hazardous Substances, Pollutants or Contaminants.**

Air monitoring readings from the breathing zone in the bathhouse during EPA's initial entry were well below residential standards (1000 ng/m<sup>3</sup>). Readings from the 3-foot by 3-foot concrete floor of the shower that was used by the employee

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<sup>1</sup> United States of America, Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine Prevention, Response and Medical Support Branch Emergency Response Team. (2012, March 22). Action Levels for Elemental Mercury Spills.

<sup>2</sup> Arch Environ Health, 1976 Nov-Dec; 31(6):302-9. Clearance of mercury (HG-197, HG-203) vapor inhaled by human subjects.

<sup>3</sup> <https://www.epa.gov/mercury/health-effects-exposures-mercury>

who discovered the mercury were elevated as were several floor mats. Results indicated that there were no beads of mercury in the floor drain of the shower. No other levels of concern were detected in the bathhouse.

Air monitoring readings from the breathing zone in the garage during EPA's initial entry were 72,360 nanograms per cubic meter (ng/m<sup>3</sup>). A reading from near the location of the spill was 229,000 ng/m<sup>3</sup>. The lowest reading obtained during the initial assessment of the garage was 34,840 ng/m<sup>3</sup>. This exceeded the limit of 3,000 ng/m<sup>3</sup> for commercial settings.

**B. Check applicable factors (from 40 CFR 300.415) which were considered in determining the appropriateness of a removal action:** EPA has considered all the factors described in 40 CFR 300.415(b)(2) of the NCP and determined that the following factors apply at the Site.

- ☒ Actual or potential exposure to nearby human populations, animals or the food chain from hazardous substances or pollutants or contaminants [300.415(b)(2)(i)].
- ☐ Actual or potential contamination of drinking water supplies or sensitive ecosystems [300.415(b)(2)(ii)].
- ☐ Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that pose a threat of release [300.415(b)(2)(iii)].
- ☐ High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate [300.415(b)(2)(iv)].
- ☐ Weather conditions that may cause hazardous substances or pollutants to migrate or to be released [300.415(b)(2)(v)].
- ☐ Threat of fire or explosion [300.415(b)(2)(vi)].
- ☒ The availability of other appropriate federal or state response mechanisms to respond to the release [300.415(b)(2)(vii)].
- ☐ Other situations or factors that may pose threats to the public health or welfare of the United States or the environment [300.415(b)(2)(viii)].

#### **IV. Selected Removal Action and Estimated Costs**

##### **A. Situation and Removal Activities to Date**

###### **1. Current Situation.**

EPA's Removal Program initiated an emergency response on the authority of the On-Scene Coordinator (OSC) on May 30, 2024. An EPA response team arrived at the yoga retreat center on May 31, 2024 and secured the release.

###### **2. Removal activities to date:**

###### **a) Federal Government/Private Party**

Operations Period 01: May 31 - June 1, 2024

EPA's response team closed the shower stall in the bathhouse and secured the garage using caution tape and traffic cones. The team organized its vehicles and equipment in the southern third of the retreat's parking lot closest to the garage.

The team focused its initial efforts on the bathhouse and, in particular, the shower stall used by the employee who discovered the mercury. All the rugs were removed for disposal as was a wood pallet on the floor of the shower stall, a shower curtain and the wood trim just outside the shower. The floor of the shower stall was then cleaned with a vacuum that is specifically designed to collect mercury (mercury vacuum). The entire shower stall was then treated several times with a chemical reagent designed to produce a non-vaporizing sulfide when it comes in contact with mercury (HgX). Particular attention was paid to the floor of the shower and the area around the drain. Mercury contamination levels were then monitored with Lumex instrumentation and found to be greatly reduced. Out of an abundance of caution, the concrete floor of the shower was sealed with a waterproof coating and allowed to dry.

After two days of being closed, the OSC cleared the shower stall and bathhouse for use due to 1) the fact that guest housing at the retreat do not have showers, 2) the low levels of contamination detected in the breathing zone of the bathhouse and on the floor of the shower, and 3) the sensitivity of the Lumex equipment that was used to collect readings over a small, contained space.

The team began its effort at the garage. The team navigated the delivery of a covered roll-off dumpster to the Site over a narrow access road with tight turns. The team also established exclusion, contaminant reduction and support zones at the garage.

The team worked its way from the garage's east doorway to the location of the release (the workbench). Items in the garage that were not attached to the structure were removed from the building. These items were cleaned with a mercury vacuum and screened. Contaminated items were further processed for disposal. Management at the retreat requested that the team attempt to save several items which would be difficult for the non-profit to replace. These items were treated with HgX and left to heat and vent in the sun (a propane heater was occasionally used to heat these items).

A mercury vacuum was also used to collect pools and beads of liquid mercury from the floor, workbench and shelving where the release occurred.

An estimated 500mL of liquid mercury was collected during this Operations Period.

#### Operations Period 02: June 2, 2024

The team worked its way through the rest of garage using mercury vacuum.

Most of the items in the garage were removed from the building during this Operations Period. These items were vacuumed and processed for either disposal or decontamination. The majority of items from the garage are being disposed. A second lined and capped roll-off was mobilized to the Site.

The bottle of mercury broke next to an overhead garage door. The team vacuumed the overhead door, used plastic sheeting to isolate the door from the outside and carefully cracked the door open. The team then removed and disposed of the rubber seal on the bottom of the overhead door before vacuuming all of the cracks beneath.

Screening results from the floor of the garage exceeded 100,000 nanograms per cubic meter in multiple areas. The team discovered liquid mercury beads even towards the very rear of the garage.

#### Operations Period 03: June 3, 2024

The team completed the removal of all items in the garage that were not attached to the structure. The team is attempting to decontaminate several items on behalf of the non-profit retreat including, but are not limited to, power tools, a riding mower and a charger for a golf cart. The items that screened at less than 6000 ng/m<sup>3</sup> after processing were released to the property owner.

The team started demolishing the work bench and shelves where the release occurred. A containment within the garage was planned for the next Operation Period.

The mercury vacuum continued to be used to collect liquid mercury pools and beads as they were discovered.

#### Operations Period 04: June 4, 2024

The team discovered pockets of liquid mercury in the garage once all the items had been removed. This mercury was collected with a mercury vacuum. The team also re-vacuumed every exposed surface in the garage, except the ceiling, inch by inch, paying particular attention to cracks and tiny gaps.

The team used plastic sheeting to isolate the area around the workbench and began to slowly dismantle the shelves and bench in that area. Once a portion of the workbench was removed, the team found 2-inch pools of mercury and the element seeped from several newly exposed cavities. This element then dispersed across the floor of the containment within the exclusion zone each time requiring meticulous use of the mercury vacuum to clear the containment area.

The response team continued to decontaminate the items that the non-profit

requested be salvaged. The team treated many of these items a second time with HgX and actively heated several items with a portable heater before they were allowed to vent. Many items screened at less than 6000 ng/m<sup>3</sup> and released to the property owner.

#### Operations Period 05: June 5, 2024

The team collected readings from the air inside the garage at the start of the day. These readings were extremely high and exceeded the capabilities of the instrumentation being used (Jerome mercury meter). This test result indicated the team could not enter the work zone until the building had been ventilated. The team opened the doors, continued to monitor air quality and entered the exclusion zone after roughly 30 minutes. The high readings were likely a result of the workbench area where the release occurred being only partially demolished and the elemental mercury in the area that had yet to be collected.

The response team improved the plastic sheeting isolating the workbench area and continued to slowly dismantle the shelves and bench. The shelves and plywood wall above and behind the workbench were also removed. Elemental mercury beads were encountered throughout this process and the team often stopped the demolition to vacuum the floor of the containment area.

The mercury vacuum broke down after lunch. The team had brought two such vacuums to the Site but the other had also malfunctioned during a previous Operations Period. A replacement mercury vacuum was located and arrived on-Site just before midnight.

Several more items requested by the property owner including a riding mower and several power tools successfully completed the decontamination process and were released to the retreat's staff. Other items continue to be decontaminated.

#### Operations Period 06: June 6, 2024

The team completed the demolition and removal of the work bench and shelves where the release occurred . The plywood surface of the walls in this area was also removed. The entire garage was then carefully re-vacuumed inch-by-inch a third time with the mercury vacuum.

The team then applied a generous amount of HgX. This chemical reagent works on residual mercury. It does not work well on liquid mercury beads so once the reagent had dried and the garage had been thoroughly ventilated, the team entered the garage with sensitive instrumentation and carefully screened all the surfaces in the garage. Mercury beads were again discovered in a few areas and collected with the mercury vacuum.

The response team continued to decontaminate items requested by the property

owner. Several power tools, a golf cart charger and other items were released. Other items continued to be decontaminated.

#### Operations Period 07: June 7, 2024

EPA's response team applied two additional applications of HgX to the floor of the garage paying particular attention to cracks and the baseplate of the garage framing which was exposed when the team removed the plywood wall surfaces in the corner where the release occurred. Once the reagent had dried and the garage had been thoroughly ventilated, the team carefully screened the garage looking for liquid mercury. The beads of mercury that were discovered were tiny and the team was better able to locate them now given ambient levels of airborne mercury were decreased are coming down. These areas were re-cleaned with a mercury vacuum to recover these beads.

The response team completed its effort to decontaminate the items that the non-profit would have difficulty replacing and requested that EPA salvage. All items that could be cleared have been returned to the property owner. All items that could not be decontaminated were added to the disposal waste stream.

The team was able to inspect the soil outside the overhead garage door. This area had been covered with plastic sheeting so the response team could focus on the interior of the building. Mercury readings in this area were slightly elevated and several beads of mercury were recovered.

#### Operations Period 08: June 8-10, 2024

EPA's response team completed 5 cycles of heating/venting of the garage. During each cycle, the interior of the garage was heated to approximately 90 degrees Fahrenheit. That temperature was held for roughly 1 hour before being vented using open doors, windows and fans for 15 minutes. Air monitoring readings taken after this process showed improvement but a hot spot was detected at the window near the location of the release. The entire window was removed, and the crew discovered approximately 15 milliliters of liquid mercury trapped between the bottom window jam and the wood framing. This mercury was collected, and the window was added to the contaminated debris waste stream.

No beads of mercury were discovered in the soil outside the overhead garage door. To prevent any undetected microbeads that may exist from being tracked elsewhere, the soil in this area was carefully heated with a propane weed burner and covered with 4 inches of fresh dirt.

The cracks in the garage floor were sealed with caulk. The crew paid particular attention to the void beneath a section of the garage's base plate which was exposed when the plywood behind the work bench was removed. This section of the base plate remains a hot spot but cannot be removed because it is structural.

The exposed base plate and the floor of the garage were painted with a concrete sealer.

The door to the electrical service panel which was behind the work bench was removed and replaced with cardboard. Power to the garage was switched off at the garage's meter. Power should not be switched back on until the service panels door has been replaced.

EPA's response team initiated an 8-hour clearance run using sensitive Lumex instrumentation. The clearance run measured levels of airborne mercury in the breathing zone of the garage over roughly 13 continuous hours. Over this time period, mercury levels increased from 82 nanograms per cubic meter (ng/m<sup>3</sup>) and were leveling off at roughly 1600 ng/m<sup>3</sup> when the clearance run was stopped. Given the temperature in the building dropped over the course of the run, it is probable that there are times during the day when mercury levels in the garage are higher. EPA's response team can locate no other sources of liquid mercury and cannot remove the baseplate. It will take time and ventilation but mercury levels in the building should continue to decrease over the next few months. The property owner has agreed to keep the building well-ventilated this summer.

There are no standards for the clearance of commercial structures that are only occasionally used such as the garage. The standard for airborne mercury in a commercial space which is occupied 8 hours and 40 hours a week is 3000 ng/m<sup>3</sup>. Based on this information and the data collected during the clearance run, the garage were cleared for use by staff of the retreat center.

The exclusion, contaminant reduction and work zones were broken down and the response team demobilized from the Site.

b) State/local

None.

### 3.Enforcement

Where the responsible parties are known, an effort initially shall be made, to the extent practicable, to determine whether they can and will perform the necessary removal action promptly and properly.

## **B. Planned Removal Actions**

### 1. Planned action description

EPA response assets will:

1. Safety of employees of the retreat center, its guests and response personnel is top priority.

2. Clear the bathhouse for use (**complete**).
3. Collect recoverable mercury (**complete**).
4. Clear the garage for use (**complete**).
5. Dispose of contaminated debris and recovered mercury.
6. Provide timely + accurate communication of response information to public and stakeholders.

The proposed actions will, to the extent practicable, contribute to the efficient performance of any long-term remedial action at the site.

## 2. ARARs

Removal actions conducted under CERCLA are required to attain ARARs to the extent practicable. In determining whether compliance with ARARs is practicable, the OSC may consider appropriate factors, including the urgency of the situation and the scope of the removal action to be conducted.

To date, no ARARs have been identified for this Site.

## 3. Project Schedule

Final disposal of all contaminated debris and recovered mercury is anticipated to occur by July 31, 2024.

### C. Estimated Costs\*

Contractor costs (ERRS/START staff, travel, equipment)	<b>\$208,333</b>
Other Extramural Costs (Strike Team, other Fed Agencies)	<b>\$0</b>
Contingency costs (20% of subtotal)	<b>\$41,667</b>
<b>Total Removal Project Ceiling</b>	<b>\$250,000</b>

\*EPA direct and indirect costs, although cost recoverable, do not count toward the Removal Ceiling for this removal action. Liable parties may be held financially responsible for costs incurred by the EPA as set forth in Section 107 of CERCLA. "

## V. Expected Change in the Situation Should Action Be Delayed or Not Taken

A delay in action or no action at this Site would increase the actual or potential threats to the public health and/or the environment.

## VI. Outstanding Policy Issues

None

## **VII. Approvals**

This decision document represents the selected removal action for this Site, developed in accordance with CERCLA as amended, and is not inconsistent with the National Contingency Plan. This decision is based on the administrative record for the Site.

Conditions at the site met the NCP section 300.415(b) criteria for a removal action and through this document, I am approving the proposed removal actions. The total project ceiling is \$250,000, this amount will be funded from the Regional removal allowance.

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Martin McComb,  
Federal On-Scene Coordinator

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Date

### Attachments

Attachment 1: Initial Photos Provided by Reporting Party

Attachment 2: EPA Initial Entry Screening Results

## Attachment 1: Initial Photos Provided by Reporting Party







## Attachment 2: EPA Initial Entry Screening Results

Bath House

Helena Mercury Spill  
Mercury Screening Form

[illegible]

\* Units Definitions: ng/m<sup>3</sup> (nanogram per cubic meter), µg/m<sup>3</sup> (microgram per cubic meter), mg/m<sup>3</sup> (milligram per cubic meter)  
 \*\* Height Definitions: BZ = Breathing zone, FL = Floor.



Garage

Helena Mercury Spill  
Mercury Screening Form

[illegible]

\* Units Definitions: ng/m<sup>3</sup> (nanogram per cubic meter), µg/m<sup>3</sup> (microgram per cubic meter), mg/m<sup>3</sup> (milligram per cubic meter)  
 \*\* Height Definitions: BZ = Breathing zone, FL = Floor.